CLAIMS:

1. A method for controlling the order of datagrams, the datagrams being processed by at least one processing engine, each of the at least one processing engine having at least one input port and at least one output port, wherein each datagram or each group of datagrams has a ticket associated therewith, the ticket being used to control the order of the datagram or group of datagrams at the at least one input port of the processing engine and at the at least one output port of the processing engine.

2. A method according to claim 1, wherein the order of the datagrams or group of datagrams at the at least one input port corresponds to the order of the datagrams at the at least one output port.

3. A method according to claim 1, wherein the tickets comprise numerical values.

4. A method according to claim 1, wherein the ticket comprises a semaphore with data associated therewith.

5. A processing engine for processing datagrams in a predetermined order, the processing engine comprising at least one input port, at least one output port and at least one processing element, the at least one processing element comprising an input port connected to the at least one input port of the processing engine, an output port connected to the at least one output port of the processing engine and arithmetic and logic means, the order of

processing datagrams being controlled at the at least one input port of the processing engine and the at least one output port of the processing engine by a ticket associated with the datagram or a group of the datagrams.

6. A processing engine according to claim 5, wherein the processing element comprises an element of a multi threaded array processing engine.

7. A processing engine according to claim 5, wherein the processing element can leave or enter the predetermined order.

8. A processing system comprising a plurality of processing engines for processing datagrams in a predetermined order, each processing engine comprising at least one input port, at least one output port and at least one processing element, the at least one processing element comprising an input port connected to the at least one input port of the processing engine, an output port connected to the at least one output port of the processing engine and arithmetic and logic means, the order of processing datagrams being controlled at the at least one input port of the processing engine and the at least one output port of the processing engine by a ticket associated with the datagram or a group of the datagrams.

9. A processing system according to claim 8, wherein datagrams are processed in a round robin manner.

10. A processing system according to claim 8 further comprising a ticket dispenser for giving tickets to a datagram or group of datagrams.

11. A processing system according to claim 10, wherein the tickets are issued on a first come first served basis.

12. A processing system according to claim 8 further comprising a counter for maintaining the value of the current ticket.

13. A processing system according to claim 12, wherein the counter comprises storage means for storing a numerical value.

14. A processing system according to claim 13, wherein once a processing element is allocated a datagram or group of datagrams for processing, the counter is incremented.